

CLAIMS

What is claimed is:

- 1 1. A magnetic head device, comprising:
 - 2 a slider having a side surface;
 - 3 a thin film magnetic head element formed by layering on the side
 - 4 surface; and
 - 5 a magnetoresistance effect element in a thin film
 - 6 magnetic head element, the magnetoresistance effect element exposed
 - 7 on the side surface to oppose a magnetic recording media, a degenerated
 - 8 layer produced by polishing on the side surface to oppose the magnetic
 - 9 recording media removed by dry etching over a region including
 - 10 component parts of the thin film magnetic head element.
- 1 2. A method of manufacturing a magnetic head device,
 - 2 comprising:
 - 3 forming by layering a thin film magnetic head element on a side
 - 4 surface of a slider, the thin film magnetic head element including a
 - 5 magnetic reproduction element part comprised of a magnetoresistance
 - 6 effect element, the magnetoresistance effect element formed to a height
 - 7 equal to a target height of a stripe of the thin film magnetic head element
 - 8 plus a depth of a magnetically degenerated layer to be produced by
 - 9 polishing;

10 polishing the side surface to oppose a magnetic recording media,
11 the polishing to produce the magnetically degenerated layer; and
12 dry etching to remove material in a region containing component
13 layers of the magnetic reproduction element part on the surface to oppose
14 the magnetic recording media, until a height of the stripe of the
15 magnetoresistance effect element is the target height.

1 3. A method of manufacturing a magnetic head device,
2 comprising:
3 forming by layering a thin film magnetic head element on a side
4 surface of a slider, the thin film magnetic head element including a
5 magnetic reproduction element part comprised of a magnetoresistance
6 effect element;
7 polishing the side surface to oppose a magnetic recording media;
8 and
9 dry etching immediately after the polishing process to remove
10 material in a region containing component layers of the magnetic
11 reproduction element part on the surface to oppose the magnetic
12 recording media, to a depth of $1/30$ or greater but less than $1/10$ a stripe
13 height of the magnetoresistance effect element.

1 4. A method of manufacturing a magnetic head device,
2 comprising:

3 forming by layering a thin film magnetic head element on a side
4 surface of a slider, the thin film magnetic head element having a plurality
5 of component layers including a magnetoresistance effect element film;
6 polishing the side surface, the side surface to oppose a magnetic
7 recording media of the magnetic head device, the polishing to flatten the
8 side surface over the plurality of component layers, the polishing to
9 produce a magnetically degenerated layer; and
10 removing by dry etching a region containing the magnetoresistance
11 effect element film including the magnetically degenerated layer on a
12 surface part of the side surface.